Bachelor thesis

Epitranscriptome - Epic post-transcriptional regulon

School year	2024-2025	**Department / Workplace**	Department of Experimental Plant Biology, Faculty of Science, Charles University; Institute of Experimental Botany of the CAS
Type of work	Bachelor thesis	**Supervisor**	prof. RNDr. David Honys, Ph.D.
Language	Czech / English	**Consultant**	Said Hafidh, Ph.D.

Preliminary work description

Epigenetics is a process of nucleic acid modifications at the **DNA level** deployed by all living organisms to control **gene expression**. Post-transcriptional **epitranscriptomics** involves chemical modification of nucleic acids on **newly transcribed RNA** molecules as a **new layer** of regulation for gene expression. Protein complexes termed "**writers**","**readers**" and "**erasers**" can perform specified modification commonly **methylation** of **adenosine** at N6-position (**m6A**) to alter **RNA half-life**, subcellular localisation as well as their **translatability**, thereby directly influencing protein **abundance** and **function**.
This project will explore and gather recent and past literatures on epitranscriptomics in the context of plant **development**, **reproduction** and **environmental stress** focusing on RNA modifications and latest tools to study the impact of those modifications. The outcome of the thesis will entail **unraveling** the complex regulatory mechanisms of **epitranscriptome regulon** in plants with specific highlight in plant reproduction and adaptation to heat stress impacting various stages of plant development.

Principles for a good thesis

The prerequisites for a successful solution are a **genuine interest** in the subject, self **motivation** to write and defend the thesis and at least a basic **knowledge of plant biology**. **Independence** (which does not mean being left to one's own, but actively seeking and exploring new stimuli with the all-round support of the supervisor and consultant) and a willingness to learn new things and **openness to new approaches** are advantageous. The thesis will be based on a variety of literature, overwhelmingly in English, including relevant reviews. The Bachelor's thesis may be followed by an **experimental Master thesis** based on the information gathered. **Examples of theses** from our lab are here: http://www.pollenbiology.cz/team/.

Scientific literature

Original scientific articles and reviews in English, e.g. here: http://www.pollenbiology.cz/publications/.

We offer

Work in a young and inspiring team; the successful candidate may get a **position in** the Laboratory of Pollen Biology of the **Institute of Experimental Botany** of the CAS. This includes, e.g., the possibility to cover **conference** expenses (presentation of own results) and financial support.

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